

# SUNNYWAY TECHNOLOGY(CHINA)

## ANTENNA SPEC

|                                           |                 |                 |
|-------------------------------------------|-----------------|-----------------|
| Customer name: Tianbo (Shenzhen) Co., Ltd |                 | Entry name: T20 |
| Working band: WiFi(2.4G/5G)               |                 |                 |
| Motherboard version:                      |                 |                 |
| Sunnyway Material specification           |                 |                 |
| Specification type                        | Sunnyway number | Customer number |
| WIFI Antenna                              | SZ22060IB77-3   |                 |
|                                           |                 |                 |

|                            |                |                |         |
|----------------------------|----------------|----------------|---------|
| <b>Revision history</b>    |                |                |         |
| Date of preparation/change | Change content | Altered person | Edition |
| 2023.06.08                 | New issue      | Chen min       | A       |
|                            |                |                |         |
|                            |                |                |         |

|                                    |     |             |     |           |
|------------------------------------|-----|-------------|-----|-----------|
| <b>Sunnyway Countersign column</b> |     |             |     |           |
| R&D                                | ME: | To examine: | QE: | Approval: |
|                                    | RF: | To examine: |     |           |

|                                      |                 |                     |                  |
|--------------------------------------|-----------------|---------------------|------------------|
| <b>Customer will sign the column</b> |                 |                     |                  |
| Electronic Engineer                  | Project manager | Structural Engineer | Quality Engineer |
|                                      |                 |                     |                  |

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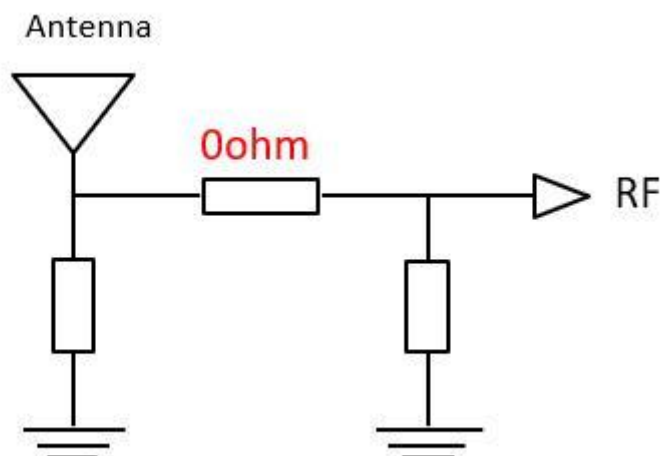
Email: sales@sunnyway-iot.com Web: www.sunnyway-iot.com

## 1. Project information

### 1.1 Mockup picture



## 2. Matching circuit



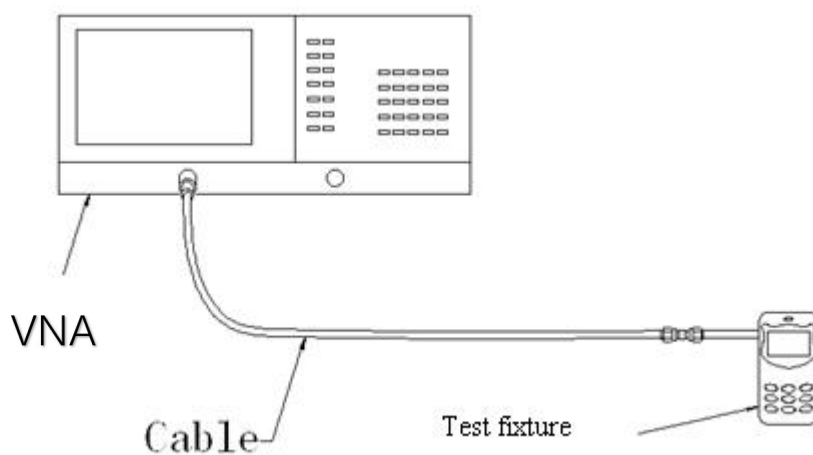
## 3. Antenna passive testing data

### 3.1 S11 Description of the test method

Test the equipment: Vector network analyzer (Agilent E5071C)

Test methodology: Use a 50 ohm CABLE cable to export from the instrument test port, use the calibration piece to calibrate and connect the SMA connector of the test fixture, and record the return loss and standing wave ratio corresponding to the relevant frequency point.

Below is a schematic picture of the test:

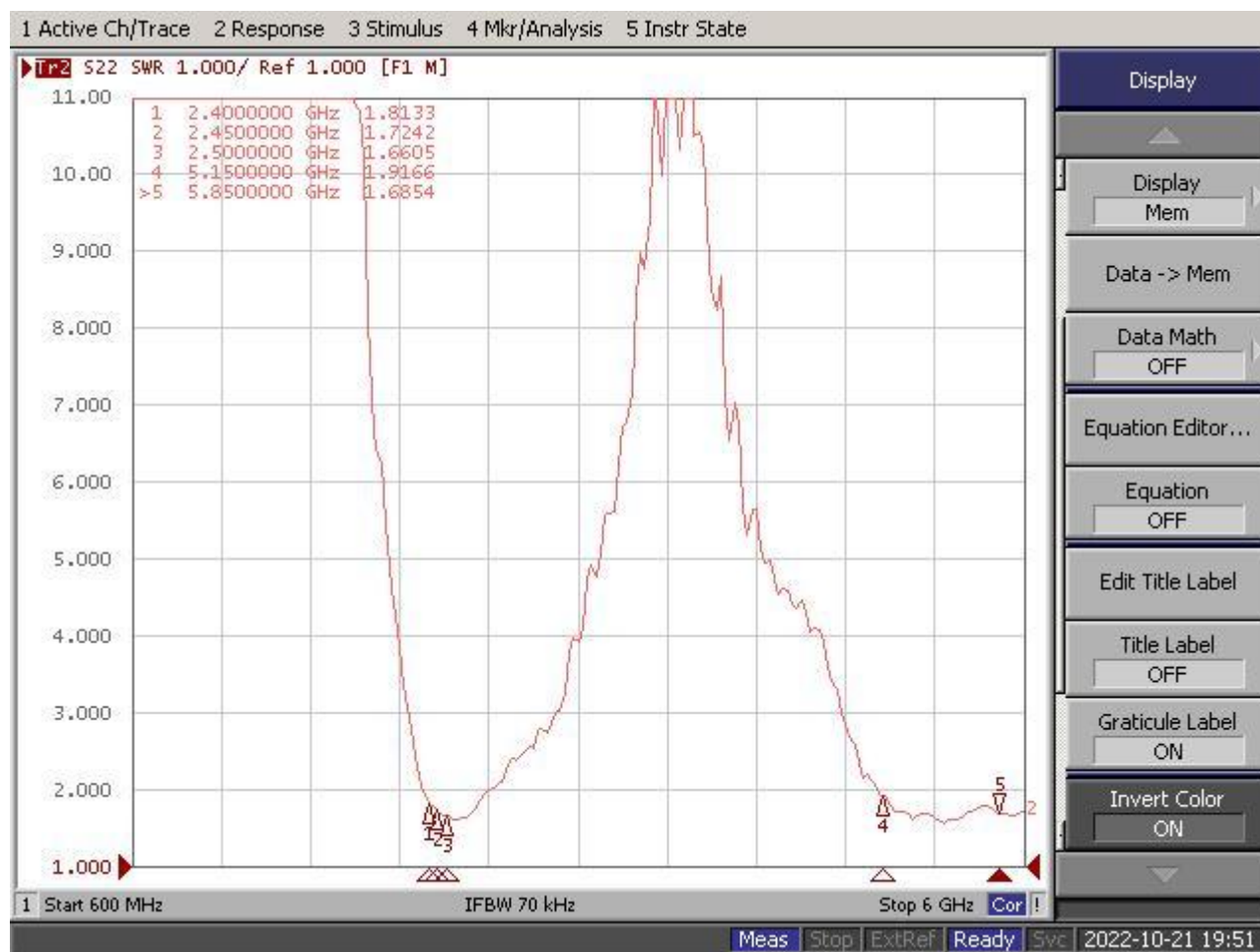


Test schematic diagram

## 3.2 S11 Test parameters

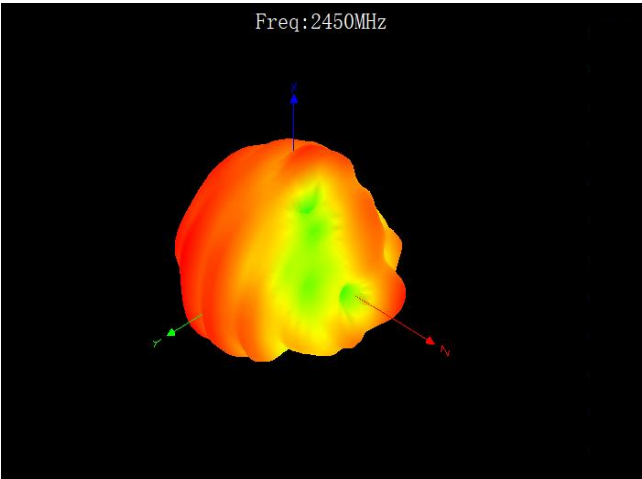
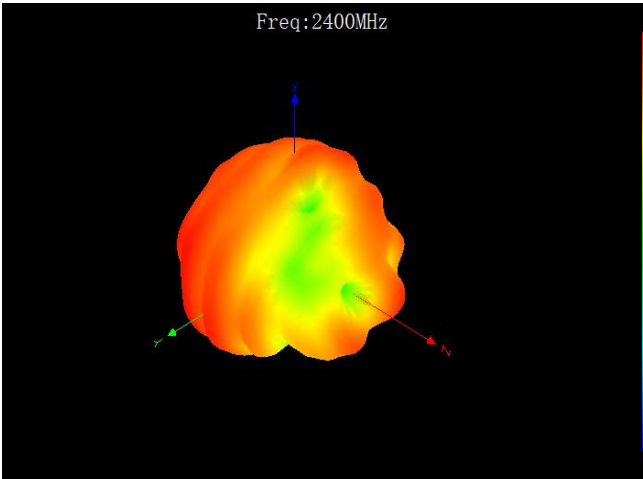
|             |      |      |      |      |      |
|-------------|------|------|------|------|------|
| (Freq.) MHz | 2400 | 2450 | 2500 | 5150 | 5850 |
| VSWR        | 1.8  | 1.7  | 1.6  | 1.9  | 1.6  |

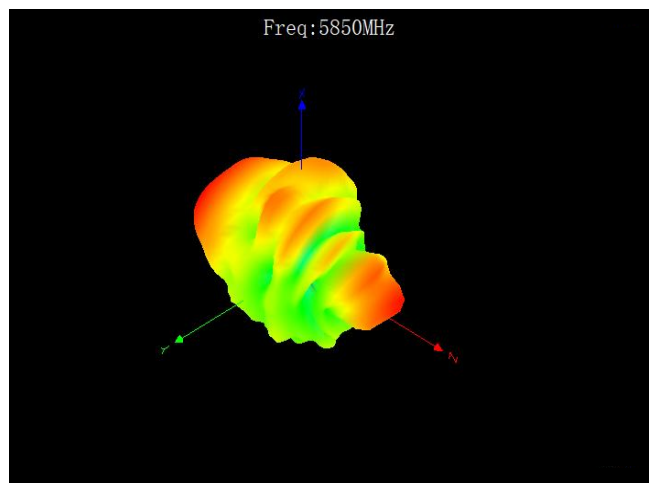
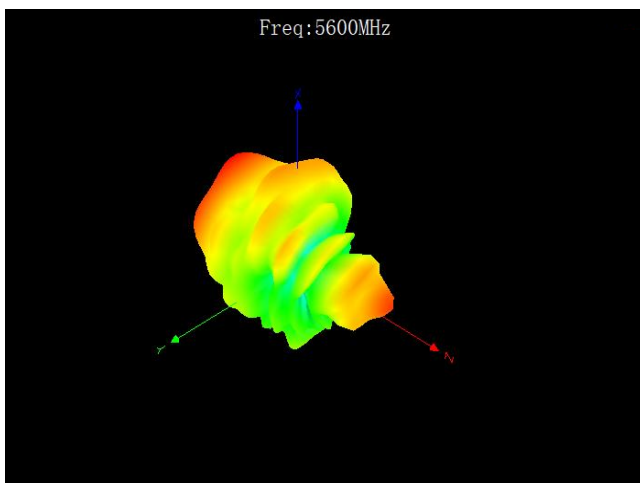
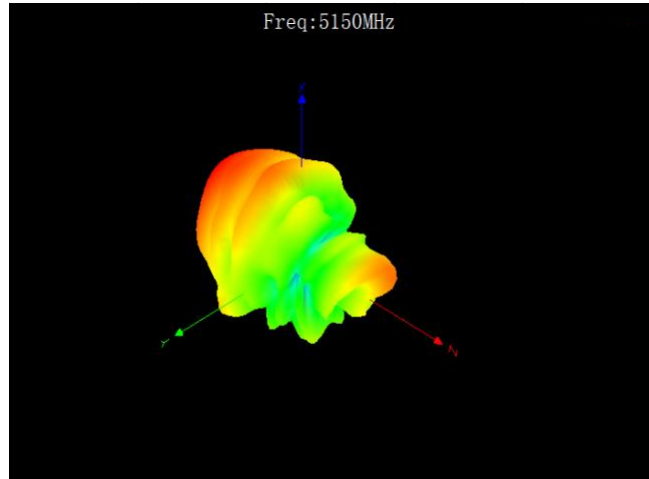
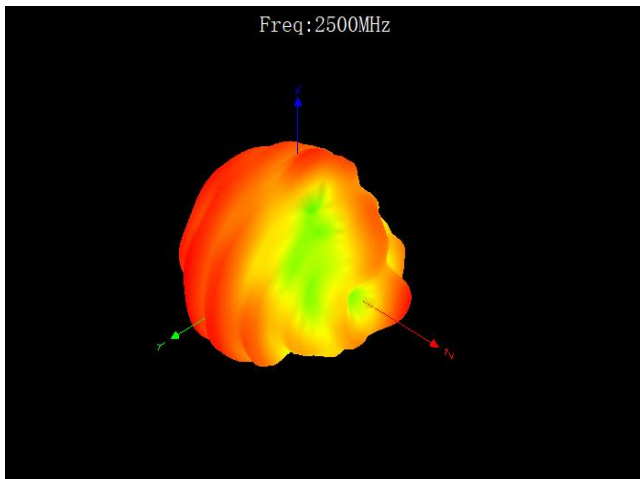
## VSWR



3.3.1 Antenna

|                                    |           |           |
|------------------------------------|-----------|-----------|
| Frequency Range(MHz)               | 2400~2500 | 5150-5850 |
| Antenna Specification <sup>#</sup> | 2.16dBi   | 0dBi      |





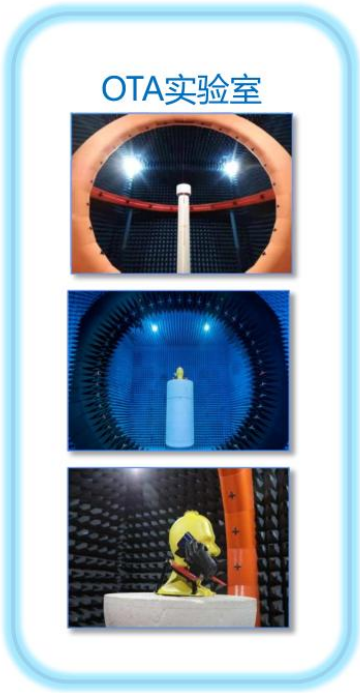
## 4. Antenna active testing data

### 4.1 Test the environment

Test the system: Multi-probe OTA measurement system (XH-IoT)

Test the environment: Temperature  $22^{\circ}\text{C}\pm 3^{\circ}\text{C}$ , humidity  $50\%\pm 15\%$

Test the equipment: When testing passive data, use the network analyzer R&S ZND/ Agilent E5071C  
When testing active data, use the Agilent 8960/CMW500/SP9500E/SP8315



4.2 OTA Active testing data

4.2.1 WIFI Testing data

| Standard  | Band             | Channel | Total  |
|-----------|------------------|---------|--------|
| WIFI (AP) | WIFI_B (11M)     | 1       | 14.3   |
| WIFI (AP) | WIFI_B (11M)     | 6       | 15.43  |
| WIFI (AP) | WIFI_B (11M)     | 11      | 15.73  |
| WIFI (AP) | WIFI_B (11M)     | 11      | -85.26 |
| WIFI (AP) | WIFI_G (54M)     | 1       | 13.32  |
| WIFI (AP) | WIFI_G (54M)     | 6       | 13.96  |
| WIFI (AP) | WIFI_G (54M)     | 11      | 13.69  |
| WIFI (AP) | WIFI_G (54M)     | 11      | -72.35 |
| WIFI (AP) | WIFI_N_ISM (65M) | 1       | 11.66  |
| WIFI (AP) | WIFI_N_ISM (65M) | 6       | 12.2   |
| WIFI (AP) | WIFI_N_ISM (65M) | 11      | 11.5   |
| WIFI (AP) | WIFI_N_ISM (65M) | 11      | -67.27 |

| Standard  | Band              | Channel | Total  |
|-----------|-------------------|---------|--------|
| WIFI (AP) | WIFI_A (54M)      | 36      | 12.77  |
| WIFI (AP) | WIFI_A (54M)      | 149     | 12.93  |
| WIFI (AP) | WIFI_A (54M)      | 165     | 13.63  |
| WIFI (AP) | WIFI_A (54M)      | 165     | -70.95 |
| WIFI (AP) | WIFI_N_UNII (65M) | 36      | 10.35  |
| WIFI (AP) | WIFI_N_UNII (65M) | 149     | 11.53  |
| WIFI (AP) | WIFI_N_UNII (65M) | 165     | 11.15  |
| WIFI (AP) | WIFI_N_UNII (65M) | 165     | -65.54 |

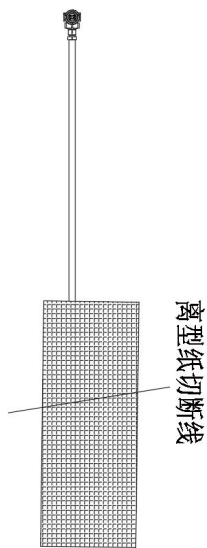
## 5. Standard for mass production antennas

When the antenna is mass-produced, the VSWR is used as the mass production test standard.

According to the differences in the project itself, the following criteria are given:

| Freq. (MHz) | Mass production standards                                                        |
|-------------|----------------------------------------------------------------------------------|
| 2400-2500   | $VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$ |
| 5150-5850   | $VSWR(\text{Production performance}) < VSWR(\text{Confirmed performance}) + 0.5$ |

# Engineering drawings



### Technical requirement

1. Packaging requirements for shipment: (Single PCS shipment)
2. Apply black matte ink on the surface of the copper pool;
3. The ink should be uniform;
4. The size with the “\*” symbol is the key size;
5. 3M 467MP for adhesive backing;
6. Use PI half in half for the substrate;
7. OSP treatment, welding of coaxial lines;
8. Undeclared chamfers are all 0.2, and the process edge is 0.2mm;
9. Unmarked tolerances shall be in accordance with the general tolerance table;
10. The product complies with RoHS2.0&REACH requirements.

OSP antioxidant zone

### Pattern zone

Release paper area

|    |                 |                       |        |        |
|----|-----------------|-----------------------|--------|--------|
|    |                 |                       |        |        |
|    |                 |                       |        |        |
| 3  | FPC             |                       | BLACK  | 1      |
| 2  | Coastal<br>line | φ 1.13MM Length 185MM | BLACK  | 1      |
| 1  | Terninal        | ANCZ113L              | GOLDEN | 1      |
| 序号 | 名称              | 规格说明                  | Colour | Dosage |
|    |                 |                       |        | notes  |

|                                                                                     |                               |               |                  |
|-------------------------------------------------------------------------------------|-------------------------------|---------------|------------------|
| 尚远科技(中国)有限公司                                                                        |                               |               |                  |
|  | PART NAME: WIFI ANT<br>(7200) |               | DATE: 2024-05-22 |
| TOLERANCE<br>X.X ±0.20<br>.XX ±0.10<br>.XXX±0.05<br>ANGULAR ≤±0.5°                  | PART NO: SZ226381B77-2        | DRAWN: Xuewei |                  |
|                                                                                     | MATERIAL: PFC+Coaxial line    | CHECKED:      |                  |
|                                                                                     | F INISHING:                   | APPROVED:     |                  |
| UNIT: mm                                                                            | COLOUR: BLACK                 | SCALE: 1:1    | REV: TA          |